

HEAD MEASUREMENT PARAMETERS AT 23338 3 TO 18 YEARS OLD HUNGARIAN CHILDREN

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(Received: January 31, 1988)

Abstract

The authors studied 3—18 agers' head measurements in four different regions of Hungary (in the towns of Szeged and Békéscsaba and in the counties of Nógrád and Szabolcs) between 1958—1984. In the case of 10953 boys and 12385 girls they examined the maximum head length, the greatest head breadth, the bizygomatic breadth, the total face height, the total head height, the head circumference, the cephalic index, the facial index, the transversal cephalo-facial index.

In this publication they will expose the most important parameters (sample size, arithmetic mean, standard deviation and range) of the above mentioned measurements and indexes for the whole sample as well as for the subsample of Szeged, not published yet.

Concerning the above mentioned age-groups, the pooled sample is the result of the largest till now collection of data in Hungary.

It was stated that no statistically significant differences could be observed between the absolute head measurements of children living in different regions, while at some indexes variances were significant.

Key-words: 3—18 agers, Hungarian children, head measurements, indexes.

Introduction

The development of science called forth the use of more up-to-date methods in researches in anthropology/human biology. By means of these methods, (serological, population genetical and human genetical) new information about a certain population can be obtained. Simultaneously, the so called classical investigating methods, like anthropometry, were slightly overshadowed in some fields of research work. That applies particularly to young Hungarian age-groups, where investigators, on collecting auxological data, concentrated essentially on physical development changes and neglected head measurements.

First data about Hungarian childrens' head measurements were published some eighty years ago. At first observations concerned only the head circumference (KÓCZIÁN, 1910; KONRÁDI, 1911), later they were extended to other head measurements as well (BALLAI, 1918, 1923, 1929; TÖRÖK, 1913; TUSZKAI, 1911). In Hungarian anthropological literature new data about children's head measurements can be found some ten years later (BARTUCZ, 1938; LIPP, 1938). During the following fifteen years no articles on this subject were published by Hungarian anthropolo-

gists (MALÁN, 1947). Although NEMESKÉRI studied ten head measurements and seven indexes with boys and girls in the Ivád inbreeding between 1939 and 1950, their parameters — especially by pooled age-groups — appeared only later (NEMESKÉRI, 1953).

Researches subsequent to the second world war were run either about healthy children's head measurements (DEZSŐ, 1967; EIBEN, 1967; EIBEN and PANTÓ, 1984; HEGYI and TÖRÖK, 1968; NYILAS, 1980, 1982a, 1982b, 1983, 1984, 1987; NYILAS and NYILASNÉ, 1985; PALIK, 1965; RAJKAI, 1967; SZÉNÁSY, 1971) or only about certain head characteristics (DOBÁNY, 1958; VÁGÓ, 1965). Among these publications highly prominent are RAJKAI's results from longitudinal data (RAJKAI, 1967).

The other part of researches aimed chiefly at studying handicapped children's head measurements (BUDAY, 1978a, 1978b; SZABÓ, 1982; SZILÁGYI, 1968, 1972) or at determining a relationship between pathological anomalies and head measurements (SZÉNÁSY, 1968).

The few items in Hungarian literature concerning juvenile changes in head measurements prove that a lot of various head measurements in large samples of Hungarian children have not been studied yet. This is apparently the cause of the lack of treatment of changes in head measurements in Hungarian text books dealing with young people's physical education, destined for medical superintendents of schools (ÁGFALVI, 1987; KAROSSA—PFEIFFER and MELLY, 1959). References of this kind can only be found in the vade-mecum meant for pediatricians and what is more, they are based on observations carried out in America in the 1940's and thus are scarcely acceptable when drawing conclusions for Hungarian children.

All these facts led us to set the aim to study Hungarian children's head measurements in a large sample.

Material and method

At first, the authors of the present publication started to collect data independently. Thus head measurements also were observed when examining pupils in Szeged (South Hungary) in the academic year of 1958/1959 (FARKAS, 1961), the evaluation results remaining unpublished. Afterwards, one of the authors engaged a large collection of data in the county of Szabolcs—Szatmár (North-East Hungary) including nursery school children (NYILAS, 1980, 1982a, 1982b, 1983, 1984, 1987; NYILAS and NYILASNÉ, 1985). This was followed by a common collection of data by both FARKAS and NYILAS in the town of Békéscsaba in 1983 (South-East Hungary) and in the county of Nógrád (North Hungary). The results of the latter collection of data were published (NYILAS, 1980, 1982a) and partly are going to be printed (FARKAS in press) While the four samples pooled data are being communicated right now.

Figure 1. shows geographical location of sample areas.

Table 1. indicates the sample size. The number of examined boys was 10953, of the girls 12385. Their distribution is variable according to sample areas, the bulk of observation having been carried out in the county of Szabolcs while the least in the county of Nógrád.

The age-groups examined in the different areas vary, too, since only two out of the four subsamples — in the county of Szabolcs and in the town of Békéscsaba — include nursery school children's measurements.

In spite of these restrictions we are convinced that the sample size by age-groups and sexes enables us to draw relevant conclusions.



Fig 1. Distribution of sample areas in Hungary

Table 1. Distribution of sample according to sample areas, years of examination, sexes and age-groups

Boys					Age	Girls				
Szeged 1958— 1959	County Szabolcs 1975— 1978	Békés- csaba 1983	County Nógrád 1984	Together		Szeged 1958— 1959	County Szabolcs 1975— 1978	Békés- csaba 1983	County Nógrád 1984	Together
—	46	89	—	135	3	—	53	77	—	130
—	49	139	—	188	4	—	52	155	—	207
—	49	168	—	217	5	—	50	164	—	214
8	125	190	—	323	6	—	89	180	—	269
90	597	119	—	806	7	77	553	123	—	753
150	718	128	—	996	8	165	734	119	—	1018
186	705	128	—	1019	9	156	690	166	—	1012
189	688	98	—	975	10	150	776	135	—	1061
171	764	103	93	1131	11	130	822	156	95	1203
207	808	102	162	1279	12	169	767	153	144	1233
187	757	114	149	1207	13	117	795	145	152	1209
148	778	126	165	1217	14	221	712	236	139	1308
212	227	115	100	654	15	273	193	443	156	1065
120	—	112	58	290	16	200	—	374	147	721
149	—	91	59	299	17	152	—	310	139	601
101	—	69	47	217	18	78	—	189	114	381
1918	6311	1891	833	10953	Total	1888	6286	3125	1086	12385

As it has been mentioned above data of one out of the four sample areas (county of Szabolcs) were already published while young people's parameters from Békéscsaba will appear in a next publication (FARKAS, in press). There were only a few children examined in the county of Nógrád thus their parameters will not be given separately. In the following we are giving the parameters both by sexes and indexes for the whole sample (Tables 2 to 10), what can be considered as standards for Hungary. As to children of Szeged, their parameters will also be given separately according to the mentioned points of view (Tables 11 to 19).

The evaluation was made on R-55 type computer by the László Kalmár Cybernetic Laboratory of Attila József University. As differences between arithmetic means were difficult to determine on the basis of six month age-group schemes, the whole sample was analysed according to one year age-group schemes. On settling the age the decimal table of IBP was taken in account.

The following measurements and indexes were determined making use of the Martin-Saller method (MARTIN and SALLER, 1956): maximum head length, greatest head breadth, minimum forehead breadth, total head height, head circumference, total face height, bizygomatic breadth, cephalic index, total facial index, transversal cephalo-facial index.

Results

The examined head and face measurements growth proceeds —with slight shifts— at nearly the same rate as the height growth.

The averages of different regions show no essential differences between the same age-groups, what is a result confirmed by significance tests.

Table 2. Parameters of maximum head length (g-op). — Total

Boys				Age	Girls			
n	\bar{x}	s	w		n	\bar{x}	s	w
135	171.63	6.91	157—190	3	129	166.17	5.52	152—177
188	171.13	6.76	153—192	4	207	167.87	6.19	154—183
217	174.18	7.37	152—196	5	214	168.80	6.74	146—187
323	173.01	7.86	146—194	6	269	169.41	6.48	150—190
805	169.98	6.65	147—196	7	753	166.68	6.65	147—188
996	171.20	6.23	147—194	8	1016	168.12	5.95	140—196
1019	172.01	6.10	151—194	9	1012	169.50	5.94	141—187
975	173.47	6.15	151—196	10	1061	170.25	6.44	150—198
1129	174.41	6.53	152—200	11	1200	171.83	6.20	146—196
1278	176.32	6.47	153—200	12	1229	173.48	6.05	155—208
1207	176.94	6.20	160—200	13	1209	174.73	5.81	158—202
1214	178.78	6.92	154—205	14	1308	175.65	6.79	144—198
654	181.89	7.08	161—207	15	1065	178.56	6.02	159—196
290	187.14	6.67	171—206	16	720	180.23	6.22	156—200
298	188.32	6.34	171—205	17	598	180.08	6.48	164—204
215	188.21	6.97	166—210	18	380	179.63	6.21	162—200
10943					12370			

In the case of the cephalic index a great similarity exists between children living in the county of Szabolcs and those living in Szeged. Children living in Békéscsaba and Nógrád fall behind the values of Szabolcs and those of the pooled sample with 2 to 5 index rates.

Total face index and transversal cephalo-facial index averages clearly illustrate that in spite of the hardly perceptible variances in the absolute head measurements there are differences in the head form of children living different areas and administrative districts of Szabolcs. These differences are more important with girls than with boys. Averages of children living in Szeged, Békéscsaba and county Nógrád exceed by 1 to 2 index units in the case of boys, and 2 to 4 index units in the case of girls those living in Rétköz (part of the county of Szabolcs) or in Szabolcs.

Since the sample size exceeds 10000 both in the case of boys and girls, we are deeming that the obtained averages are characteristic for young Hungarian people who are now 6 to 18 years old.

Table 3. Parameters of greatest head breadth (eu-eu). — Total

Boys				Age	Girls			
n	\bar{x}	s	w		n	\bar{x}	s	w
134	139.09	5.90	123—153	3	130	134.83	6.62	118—149
188	140.32	6.19	128—158	4	270	136.22	5.57	125—148
217	141.86	6.36	127—158	5	214	138.46	5.32	122—153
323	144.32	5.80	129—161	6	269	140.11	5.76	124—155
806	146.62	5.69	130—170	7	752	142.71	5.54	123—171
996	147.63	5.53	125—170	8	1015	144.09	5.70	123—161
1017	148.48	6.35	121—165	9	1011	144.45	6.28	120—165
975	149.83	5.49	130—167	10	1060	146.28	5.46	120—175
1130	150.19	6.74	120—169	11	1203	146.69	6.13	120—173
1279	151.23	5.89	125—167	12	1230	147.82	5.59	123—164
1207	152.02	6.15	122—169	13	1209	148.64	6.22	123—168
1215	152.92	6.67	120—172	14	1306	149.39	6.42	122—174
653	154.75	5.84	136—175	15	1065	151.24	5.53	134—173
290	156.08	5.86	137—170	16	721	152.23	5.36	136—168
297	157.73	6.02	140—171	17	596	152.08	5.80	132—169
216	157.72	5.82	141—173	18	380	152.03	5.49	138—167
10943					12368			

Table 4. Parameters of bizygomatic breadth (zy-zy). — Total

Boys				Age	Girls			
n	\bar{x}	s	w		n	\bar{x}	s	w
130	112.69	4.39	100—122	3	130	109.05	4.44	97—118
188	113.91	5.29	102—125	4	204	111.61	4.34	100—122
217	116.27	4.95	100—132	5	214	113.84	4.73	100—123
324	118.44	5.39	103—136	6	269	116.35	5.16	102—127
806	121.19	5.70	95—141	7	752	118.29	5.81	101—136
995	122.37	5.32	102—142	8	1017	120.13	5.59	94—146
1017	123.38	6.39	93—146	9	1010	121.62	5.94	92—141
973	125.01	5.79	103—143	10	1060	123.48	5.53	103—142
1130	126.15	6.53	91—148	11	1203	124.63	6.17	100—147
1279	128.09	5.57	100—148	12	1232	126.93	5.83	102—150
1207	129.80	6.01	106—148	13	1211	128.68	5.97	98—148
1212	131.67	6.94	98—162	14	1305	129.90	6.83	97—152
653	134.93	5.93	115—156	15	1065	132.67	5.39	109—155
291	137.17	6.05	116—154	16	720	134.39	4.82	120—152
297	139.23	5.31	123—154	17	598	134.74	4.99	120—151
217	139.77	5.42	127—157	18	380	134.62	4.55	124—150
10936					12370			

Table 5. Parameters of total face height (n-gn). — Total

Boys				Age	Girls			
n	\bar{x}	s	w		n	\bar{x}	s	w
134	85.18	3.76	77—97	3	128	81.67	4.61	73—92
187	86.59	4.29	80—97	4	206	84.46	4.98	73—98
217	89.47	4.34	79—100	5	214	87.58	4.45	78—100
324	92.23	5.94	72—118	6	269	90.60	5.01	77—106
806	93.49	6.06	69—119	7	749	90.81	5.93	78—120
994	95.38	5.71	78—116	8	1018	92.64	5.61	78—119
1020	97.35	6.02	81—119	9	1010	95.04	5.85	80—133
974	99.23	6.04	81—120	10	1061	97.01	5.73	67—118
1128	100.83	6.00	84—126	11	1203	99.06	6.33	78—122
1278	102.60	6.22	81—128	12	1232	101.45	5.98	86—126
1207	104.73	6.34	80—128	13	1211	103.75	6.13	83—128
1216	108.09	7.10	81—130	14	1308	105.26	5.90	81—144
652	111.35	6.53	86—132	15	1066	106.76	5.48	87—124
291	114.82	6.72	95—134	16	717	107.60	5.23	93—123
297	116.08	5.98	101—133	17	599	107.77	5.74	75—124
216	117.35	6.26	101—135	18	381	107.35	5.49	90—122
10941					12372			

Table 6. Parameters of total head height (gn-v). — Total

Boys				Age	Girls			
n	\bar{x}	s	w		n	\bar{x}	s	w
135	184.18	8.76	163—207	3	127	179.50	8.22	159—197
187	188.43	9.56	153—209	4	204	183.43	9.55	163—213
216	191.45	7.73	167—211	5	214	186.59	8.99	163—204
324	195.64	10.44	168—231	6	269	190.10	8.21	166—220
805	193.49	12.38	154—229	7	751	188.41	11.00	145—220
996	193.80	11.44	161—235	8	1016	190.08	9.90	159—220
1017	196.31	11.13	163—228	9	1013	192.07	10.07	158—222
974	197.91	11.86	160—234	10	1060	193.21	10.82	159—227
1127	200.74	11.22	163—240	11	1197	196.79	11.30	163—232
1278	202.40	10.36	168—232	12	1231	197.74	10.85	163—235
1205	205.05	10.89	168—241	13	1208	201.09	10.59	153—238
1210	209.43	11.45	176—250	14	1308	203.08	9.94	166—238
650	216.54	10.65	172—238	15	1064	202.59	9.71	161—230
290	216.54	9.97	182—243	16	721	202.91	9.66	174—230
296	217.98	10.33	189—247	17	601	203.13	9.14	174—231
217	219.78	9.72	184—243	18	379	202.05	9.53	174—227
10927					12363			

Table 7. Parameters of head circumference. — Total

Boys				Age	Girls			
n	\bar{x}	s	w		n	\bar{x}	s	w
89	499.08	12.74	472—536	3	77	483.44	13.59	443—512
137	500.60	12.54	472—539	4	158	489.96	12.22	458—525
168	508.87	14.03	463—552	5	165	493.73	13.29	436—528
199	512.35	12.94	475—547	6	176	500.02	12.01	468—537
207	512.61	13.64	473—555	7	195	505.28	13.45	468—547
278	516.91	12.98	481—560	8	283	507.00	12.81	470—549
314	520.60	12.99	482—563	9	322	512.83	12.05	473—547
286	523.72	13.62	490—557	10	284	515.86	13.80	477—556
366	528.01	14.10	492—576	11	381	520.24	14.47	471—563
470	532.20	14.23	482—577	12	465	524.93	14.87	482—566
450	536.28	14.22	488—573	13	415	531.34	13.79	485—567
437	545.24	15.64	486—598	14	593	536.32	14.11	459—578
423	550.91	16.02	490—590	15	869	540.70	13.94	500—583
290	558.91	15.60	516—596	16	718	542.85	13.43	502—589
297	564.27	14.45	526—601	17	598	543.28	14.63	492—588
216	565.50	15.68	512—608	18	378	541.63	13.73	492—584
4627					6077			

Table 8. Parameters of cephalic index. — Total

Boys				Age	Girls			
n	\bar{x}	s	w		n	\bar{x}	s	w
134	80.96	4.98	69—91	3	129	80.87	5.06	68—93
188	81.76	5.06	69—95	4	207	80.92	4.78	70—92
217	81.32	5.25	70—95	5	214	84.33	5.63	68—96
322	83.15	5.23	70—97	6	269	82.90	5.68	70—95
805	85.87	4.18	72—98	7	752	85.22	4.28	71—102
996	85.83	4.11	71—97	8	1014	85.28	4.17	67—98
1016	85.90	4.22	71—98	9	1011	84.82	4.34	70—102
974	85.95	3.80	71—99	10	1060	85.51	3.84	70—98
1128	85.71	4.30	69—99	11	1200	84.95	4.12	70—100
1278	85.36	4.05	70—101	12	1226	84.76	3.63	72—97
1206	85.49	3.94	68—97	13	1206	84.64	3.80	68—98
1213	85.11	3.92	70—99	14	1306	84.65	3.81	68—97
653	84.66	3.65	73—96	15	1064	84.28	3.62	71—98
289	83.00	3.72	73—93	16	720	84.07	3.89	72—99
296	83.32	3.76	72—93	17	594	84.07	3.92	72—95
214	83.38	3.85	72—93	18	379	84.22	4.01	72—97
10929					12351			

Table 9. Parameters of facial index. — Total

Boys				Age	Girls			
n	\bar{x}	s	w		n	\bar{x}	s	w
129	75.65	4.25	68—87	3	128	74.84	4.22	64—84
187	75.75	4.13	67—87	4	203	75.38	4.06	66—87
217	76.88	4.16	65—90	5	214	76.31	3.88	65—87
324	77.55	5.37	62—102	6	269	77.85	4.56	68—97
806	76.76	5.37	56—111	7	748	76.39	5.05	62—104
993	77.55	4.96	60—104	8	1017	76.72	4.96	64—106
1017	78.58	5.36	64—110	9	1007	77.81	5.37	57—107
971	78.98	5.10	65—101	10	1060	78.18	4.88	54—99
1127	79.61	5.95	65—113	11	1203	79.13	5.58	63—108
1278	79.66	4.86	66—107	12	1231	79.54	4.95	66—114
1206	80.25	4.66	61—101	13	1210	80.26	5.15	64—106
1211	81.70	5.02	66—108	14	1305	80.70	5.14	64—110
651	82.08	4.48	67—95	15	1064	80.06	4.12	66—97
291	83.30	5.05	69—99	16	716	79.64	4.15	68—91
295	82.94	4.48	71—94	17	596	79.55	4.52	57—95
216	83.55	5.20	69—98	18	380	79.31	4.26	67—92
10919					12351			

Table 10. Parameters of transversal cephalo-facial index. — Total

Boys				Age	Girls			
n	\bar{x}	s	w		n	\bar{x}	s	w
84	79.71	2.53	73—87	3	77	80.53	3.04	74—89
139	80.65	2.28	73—87	4	152	81.55	2.78	76—92
168	81.11	2.74	73—89	5	164	81.99	2.84	72—90
280	81.66	3.25	69—90	6	223	82.24	2.93	70—89
806	82.20	3.02	61—94	7	751	82.44	3.13	68—94
995	82.45	3.00	70—96	8	1014	82.94	3.28	67—96
1014	82.64	3.22	67—95	9	1009	83.75	3.02	71—97
972	82.97	3.20	66—95	10	1059	83.96	2.77	71—96
1129	83.58	3.56	60—96	11	1203	84.52	3.25	68—98
1279	84.25	2.91	72—95	12	1229	85.41	2.86	74—95
1206	84.92	2.95	74—98	13	1208	86.11	2.98	75—98
1211	85.61	3.17	73—101	14	1303	86.50	3.13	73—98
652	86.71	2.88	74—98	15	1063	87.28	2.91	75—97
290	87.41	2.93	78—96	16	720	87.84	2.88	79—100
295	87.81	3.15	78—97	17	595	88.11	2.74	80—97
216	88.19	3.00	80—96	18	379	88.11	2.69	80—96
10736					12149			

Table 11. Parameters of maximum head length (g-op). — Sample of Szeged

Boys				Age	Girls			
n	\bar{x}	s	w		n	\bar{x}	s	w
8	167.63	5.81	159—177	6	—	—	—	—
90	171.26	6.67	157—196	7	77	167.52	5.89	156—184
150	172.45	5.51	158—185	8	163	168.17	5.34	155—183
186	174.13	5.96	158—194	9	156	170.31	5.36	155—184
189	175.13	6.02	160—192	10	150	170.51	5.49	157—184
169	176.12	6.12	164—194	11	130	172.53	6.12	156—191
207	177.38	6.36	153—199	12	168	173.94	5.61	160—188
187	178.99	5.42	163—192	13	117	175.00	5.59	159—188
147	181.39	6.10	163—200	14	221	178.12	5.73	167—195
212	182.95	6.14	167—200	15	273	178.48	5.31	165—192
120	185.78	5.97	171—202	16	199	179.61	5.93	156—196
149	187.21	5.68	175—201	17	150	180.00	6.35	164—197
100	187.71	5.88	166—202	18	77	178.71	4.97	166—194
1914					1881			

Table 12. Parameters of greatest head breadth (eu-eu). — Sample of Szeged

Boys				Age	Girls			
n	\bar{x}	s	w		n	\bar{x}	s	w
8	148.13	5.92	143—159	6	—	—	—	—
90	148.17	5.02	136—163	7	77	145.23	4.88	132—156
150	149.39	5.27	137—161	8	163	146.32	5.05	131—161
187	150.75	5.09	138—165	9	156	148.08	4.96	134—160
189	151.25	4.73	141—165	10	150	148.92	4.55	136—161
171	152.18	4.99	139—165	11	130	149.48	4.82	136—161
207	152.79	5.79	135—166	12	169	150.04	4.71	137—162
187	152.99	5.22	140—169	13	118	150.75	5.19	138—165
146	154.10	4.74	144—167	14	219	152.25	5.23	138—169
212	154.92	5.72	141—169	15	274	152.25	5.01	138—173
121	155.69	5.79	137—170	16	200	153.18	4.95	136—168
148	158.15	5.22	145—171	17	149	153.68	4.69	142—165
100	158.14	5.86	145—173	18	77	153.75	5.00	142—165
1916					1882			

Table 13. Parameters of bizygomatic breadth (zy-zy). — Sample of Szeged

Boys				Age	Girls			
n	\bar{x}	s	w		n	\bar{x}	s	w
8	120.38	4.31	111—126	6	—	—	—	—
90	122.53	5.26	110—136	7	76	121.04	4.70	112—131
150	122.81	4.72	108—135	8	164	121.52	5.43	102—138
186	124.41	5.20	107—140	9	155	124.65	5.61	113—141
187	126.28	4.83	115—138	10	149	124.79	5.25	112—139
170	127.61	4.96	113—140	11	130	127.07	5.14	115—141
207	128.38	5.34	112—141	12	169	128.00	5.42	114—141
186	129.92	5.23	118—143	13	117	130.15	5.41	114—142
147	132.22	5.06	118—146	14	220	131.90	5.31	114—148
211	134.33	5.53	119—151	15	273	132.89	5.17	117—146
121	135.62	6.01	120—151	16	199	134.53	5.09	123—149
148	137.89	5.21	123—150	17	137	135.28	4.68	122—146
101	138.22	5.37	127—157	18	77	134.83	4.87	124—150
1912					1866			

Table 14. Parameters of total face height (n-gn). — Sample of Szeged

Boys				Age	Girls			
n	\bar{x}	s	w		n	\bar{x}	s	w
8	93.75	3.58	89—99	6	—	—	—	—
90	92.88	4.82	82—103	7	75	89.61	4.54	78—104
150	94.57	4.40	83—108	8	165	90.89	4.40	81—102
187	95.98	5.03	83—109	9	156	93.71	4.70	81—107
189	97.66	4.84	86—109	10	150	95.28	4.22	86—106
171	99.01	5.01	84—112	11	130	97.52	5.45	84—111
206	101.35	5.34	89—118	12	169	98.98	5.67	86—113
187	103.05	6.04	80—116	13	117	100.92	4.83	89—111
148	107.28	7.11	92—130	14	221	104.94	5.12	93—118
211	112.93	6.70	94—132	15	273	106.58	5.51	87—122
121	116.35	7.06	96—133	16	196	108.27	5.40	93—122
148	116.93	5.63	102—132	17	150	109.05	5.47	96—122
100	118.96	5.96	102—133	18	78	108.27	5.35	98—121
1916					1880			

Table 15. Parameters of total head height (gn-v). — Sample of Szeged

Boys				Age	Girls			
n	\bar{x}	s	w		n	\bar{x}	s	w
8	180.50	6.40	168—186	6	—	—	—	—
90	180.67	8.67	160—202	7	76	178.97	8.35	163—195
150	182.55	7.79	161—207	8	163	180.85	7.74	162—205
186	185.47	7.75	166—215	9	157	183.94	7.74	160—203
188	187.67	8.54	166—210	10	149	185.23	7.54	163—203
171	190.98	8.68	169—214	11	130	187.84	8.52	166—209
206	194.53	9.26	168—223	12	169	190.14	9.07	164—218
187	196.17	9.19	170—221	13	118	191.60	7.65	170—212
147	201.88	11.18	176—230	14	221	195.75	8.69	166—217
209	212.19	11.77	172—236	15	272	195.68	8.50	173—220
121	217.10	10.34	182—243	16	200	196.60	8.83	174—218
148	217.71	9.52	194—244	17	152	198.92	8.03	183—225
101	219.95	9.46	184—238	18	78	197.83	7.76	178—217
1912					1885			

Table 16. Parameters of head circumference. — Sample of Szeged

Boys				Age	Girls			
n	\bar{x}	s	w		n	\bar{x}	s	w
8	501.63	11.60	487—520	6	—	—	—	—
90	509.46	12.83	480—543	7	76	503.38	11.87	470—530
150	514.59	12.36	481—552	8	165	506.53	12.59	470—542
186	519.19	12.35	487—563	9	156	512.06	11.41	473—542
189	521.30	12.99	490—551	10	149	514.02	13.26	480—548
170	525.08	13.62	492—568	11	130	519.22	14.58	481—559
206	530.12	14.73	482—571	12	169	522.61	13.60	482—560
187	533.20	12.62	499—562	13	118	526.90	13.74	485—562
147	540.64	14.27	505—580	14	220	536.14	14.17	505—578
210	548.57	15.65	490—590	15	273	540.07	13.79	502—578
121	557.53	15.25	516—594	16	197	543.53	13.28	510—578
149	563.21	15.29	527—601	17	150	544.79	15.29	505—585
100	565.62	15.55	516—598	18	75	541.41	11.68	517—565
1913					1878			

Table 17. Parameters of cephalic index. — Sample of Szeged

Boys				Age	Girls			
n	\bar{x}	s	w		n	\bar{x}	s	w
8	87.88	3.83	84—95	6	—	—	—	—
90	86.19	4.50	72—98	7	77	86.29	3.84	77—97
150	86.17	3.78	77—97	8	162	86.55	3.80	72—96
186	86.15	4.02	78—98	9	156	86.55	3.79	77—98
189	85.95	3.50	77—98	10	150	86.93	3.39	79—96
169	86.02	3.69	77—96	11	130	86.22	3.22	79—95
207	85.73	3.77	75—95	12	168	85.80	2.97	78—93
187	85.06	3.30	78—93	13	117	85.79	3.37	78—94
146	84.54	3.45	75—93	14	219	85.05	3.30	75—97
212	84.25	3.41	77—94	15	273	84.85	3.16	78—95
120	83.45	3.69	74—93	16	199	84.85	3.51	75—99
148	84.01	3.08	77—93	17	147	84.97	3.44	76—94
99	83.79	3.27	76—92	18	76	85.47	3.10	77—92
1911					1874			

Table 18. Parameters of facialindex. — Sample of Szeged

Boys				Age	Girls			
n	\bar{x}	s	w		n	\bar{x}	s	w
8	77.63	3.66	74—84	6	—	—	—	—
90	75.41	4.09	65—83	7	74	73.70	4.10	63—83
150	76.59	3.78	66—86	8	164	74.40	4.14	64—88
186	76.76	4.32	64—93	9	154	74.84	4.24	65—87
187	76.98	4.40	66—89	10	149	75.96	4.01	67—86
170	77.19	4.43	65—89	11	130	76.32	4.16	66—89
206	78.52	4.07	69—88	12	169	76.89	4.18	67—90
186	78.84	4.49	61—89	13	116	77.17	4.09	67—88
147	80.73	4.51	69—93	14	220	79.18	4.34	70—92
210	83.58	4.53	72—95	15	272	79.83	4.43	66—97
121	85.36	4.99	71—99	16	195	80.06	4.23	68—91
147	84.34	4.27	73—94	17	148	80.14	4.46	71—92
100	85.60	4.69	76—98	18	77	79.90	4.39	71—91
1908					1868			

Table 19. Parameters of transversal cephalo-facial index. — Sample of Szeged

Boys				Age	Girls			
n	\bar{x}	s	w		n	\bar{x}	s	w
8	80.88	2.70	77—84	6	—	—	—	—
90	82.22	2.82	75—89	7	76	82.91	2.94	78—90
150	81.77	2.68	75—88	8	162	82.63	3.46	67—96
186	82.07	2.94	73—90	9	155	83.68	3.02	77—94
187	83.01	2.91	75—91	10	149	83.32	2.79	75—90
170	83.41	2.72	76—90	11	130	84.52	2.94	77—91
207	83.59	2.90	74—91	12	169	84.83	2.71	77—92
186	84.50	2.79	76—96	13	117	85.80	2.78	79—94
146	85.30	2.72	78—92	14	218	86.23	2.69	75—96
211	86.23	2.83	79—93	15	273	86.84	2.91	76—95
121	86.63	2.94	78—93	16	199	87.38	3.05	79—97
147	86.74	2.89	78—93	17	149	87.60	2.77	80—94
100	86.96	2.60	80—93	18	76	87.18	2.87	80—94
1909					1873			

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